Spring 6-10-2016

Financial Development and Growth in India

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Abstract:

In this paper I look to analyze whether bank loans have the ability to promote productivity for firms and also whether banks are more effective relative to other sources of lending such as the government. Using a panel dataset of 26000 firms over the time period 1997-2014 I carry out multiple two-time period lagged OLS regressions with proxy variables for firm productivity as well as some control variables to observe the differences for bank against non-bank loans. The results yielded illustrate that non-bank loans did not have a positive relationship and that perhaps there is some form of zombie lending occurring. On the other hand bank loans were shown to have positive impacts in the second lag. This could mean a delayed positive impact from investing as it may take time for the benefits to be received.

Introduction:

What is the relationship between strong financial systems and economic growth? This is an important question that has been asked over the years and for an emerging country like India it can be very interesting to observe. India is a BRIC country, one with a lot of potential and as it continues to grow its financial systems also become more detailed and intricate. Previous studies carried out on this topic find there to be a positive relationship between economic growth and financial development and I feel it is important to study this as the results can help to shape future government policy that aims to promote greater financial development thus foster more economic growth. My paper will look into how the banking system and the supply of loans can affect firm productivity and thus affect the growth in the economy. I will also be comparing bank versus non-bank loans to see which is the most effective for firm productivity. In the past similar studies have been carried out for other countries but no one has looked into emerging economies such as India and so this paper will hopefully add to existing literature.

Literature Review:

There is a large volume of literature on this subject area, beginning with Schumpeter (1911) where he emphasized the positive influence of the development of a country's financial sector on the rate of growth and the level of its per capita income. Essentially the argument is that the services provided by the financial sector, such as reallocating capital to the highest value use without substantial risk of loss through moral hazard or adverse selection or transaction costs, are an important catalyst of economic growth. Empirical studies carried out by Goldsmith (1969) implemented data from 35 countries over the time period 1860-1963 seem to be consistent with Schumpeter's argument. Goldsmith concluded, "a rough parallelism can be observed between economic and financial development if periods of several decades are observed." However as Goldsmith also noted studies such as these can only suggest correlation and there is no possibility of establishing with confidence any direction of causality or causal mechanism.

Following on from this there is an important addition to the literature by King and Levine (1993). The authors look into the issue of causality in this research topic by implementing a post hoc, ergo propter hoc approach. This approach highlights that if an event (Y) follows after an event (X) occurs then X caused Y. In this instance it is claimed that financial development was followed on by economic development, hence financial development caused economic development. There are two major

issues with this methodology. Firstly a common omitted variable could drive both financial development and growth such as propensity of households in the economy to save for example. Since endogenous savings can affect the long run growth rate of an economy, it may not be surprising that initial financial development and growth are correlated. It is harder to refute with just cross-country regressions. Without the presence of a well-accepted theory of growth, the list of potential omitted variables that financial sector development could be a proxy for is very large. The second issue is concerned with the fact that financial development, typically measured by the level of credit or the size of the stock market, may predict economic growth simply because financial markets anticipate future growth. The stock market capitalizes the present value of growth opportunities; while financial institutions lend more of they think the sector will grow. Thus financial development may be a leading indicator instead of a causal factor.

One method in which to make progress on causality is to focus on the details of the theoretical mechanisms through which financial development affects economic growth and document their working. The paper produced by Rajan and Zingales (1998) aims to do exactly this by constructing a test. They do this by identifying an industry's need for external finance from data on US firms. Under the assumption that capital markets in the United States, especially for the large listed firms we analyze, are relatively frictionless, this method allows us to identify an industry's technological demand for external financing. Under the further assumption that such a technological demand carries over to other countries, we examine whether

industries that are more dependent on external financing grow relatively faster in countries that, a priori, are more financially developed. In the end the authors discover that industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more developed financial markets.

A more recent paper by Fisman and Love (2007) looks back over the work done by RZ with the authors reexamining and reevaluating some of the assumptions made as well as the robustness of the results. They illustrate that RZ might be implicitly testing whether financial intermediaries allow firms to better respond to global shocks to growth opportunities, rather than the extent that financial intermediaries allow firms to grow in industries with an inherent financial dependence. Fisman and Love propose a more direct measure by including US industry growth into the original specification used by RZ. This is because if US capital markets are perfect then actual growth in US is a good proxy for global growth opportunities. The results yielded illustrated that their direct growth measure outperformed the financial dependence measure from RZ. It is also less vulnerable to controlling for outliers as well as the level of development.

My research paper will be able to add to the significant amount of literature in this topic area as it will use these ideas and implement them on industry level panel data for firms based in India. I will test the work carried out by RZ and relate it to those firms in India to see if this theory holds true.

Methodology:

In order to carry out my analysis I will be implementing OLS regression using the Prowess dataset provided. The dataset consists of just over 26,000 firms over the time period 1997 till 2014. This enables me to have an ample amount of observations to carry out my analysis. Unfortunately there is no variable in the dataset that directly measures firm productivity, thus I decided to use both firm sales as well as firm income as proxy variables to represent productivity. I would like to control for firm size, as there are many different firms in my sample. I decided to use net fixed assets as my control. I also include the GDP of India as macroeconomic control. I will run three different regression specifications for sales as well as income. I begin by first using total liabilities, which consists of all the loans the firms have taken out. This is used alongside GDP of India and net fixed assets to ascertain the relationship between liabilities and my proxies for firm productivity. The next specification I use will be separating the loans into bank versus non-bank loans. The bank loans variable consists of loans from banks as well as other financial institutions while the non-bank variable consists of loans provided by the central and state government. The second set of regressions will be using bank loans as my main independent variable to observe the relationship between bank loans and my proxy dependent variables for firm productivity. The third set of regressions I carry out is to use non-bank as my main explanatory variable in order to observe the relationship between non-bank loans and my proxy variables for firm productivity. The second set of regressions is used to be able to answer my first research question

about the relationship between bank loans and firm productivity. The third sets of regressions are necessary to answer the second research question where we look at whether bank loans are the most effective for firm productivity. Sales, income, net fixed assets are all divided by total assets of firms and also by the GDP deflator of India for robustness. Due to the large numbers associated with these variables, most of them being in millions or billions of rupees, I will log these variables. All of the right hand side variables will be lagged. The main independent variables will be lagged two time periods to observe and delayed effects. For example for the first set of regressions total liabilities will be lagged at time period t-1 as well as t-2. This will be the case for both bank loans and non-bank loans. The equations below illustrate the regression models I will be implementing in my analysis:

- ***1)ln (Sales/total assets) = β +β1Totalliab$_{t-1}$ + β2 lnTotalliab$_{t-2}$ + β3 lnindiaGDP$_{-1}$ + β4lnnetfixedassets$_{-1}$ + U$_{it}$***
- ***2) ln(Sales/total assets) = β + β1Bankborrow$_{t-1}$ + β2Bankborrow$_{t-2}$ + β3 lnindiaGDP$_{t-1}$ + β4lnnetfixedassets$_{-1}$ + U$_{it}$***
- ***3) ln(Sales/total assets) = β nonBankborrow$_{t-1}$ + β2nonBankborrow$_{t-2}$ + β3indiaGDP$_{t-1}$ β4lnNetfixedassets$_{t-1}$ + U$_{it}$***

This specification is carried out for (sales/GDP deflator), (income/total assets) as well as (income/GDP deflator) as the dependent variable.

Results

To begin with I start my analysis using the firms' total liabilities and regress sales, which is divided by total assets, with two lags of total liabilities plus net fixed assets as well as GDP of India. This is followed on by the regression with two lags of bank loans and finally the last regression containing two lags of non-bank loans. The table below illustrates the results yielded from this analysis for sales that is divided by total assets:

VARIABLES	(1) totallaib with netfixedassets	(2) bank with netfixedassets	(3) nonbank with netfixed assets
L.lnTotalliab1	-1.224***		
	(0.248)		
L2.lnTotalliab1	-0.641***		
	(0.203)		
lnNetfixedassets1	0.173***	0.102	0.324***
	(0.0148)	(0.0630)	(0.109)
lnindiaGDP	-0.139***	-0.00233	-0.0557
	(0.0353)	(0.0454)	(0.0735)
L.lnbank		-0.119***	
		(0.0178)	
L2.lnbank		-0.00573	
		(0.0214)	
L.lnnonbank			-0.0499***
			(0.0147)
L2.lnnonbank			-0.0414*
			(0.0225)
Constant	1.967***	0.178	0.965
	(0.646)	(0.734)	(1.257)

Observations	123,722	16,360	6,157
R-squared	0.021	0.018	0.066
Number of CompanyName1	16,928	4,126	1,664

From the table above we can observe that for the total liabilities regression, the two lags for total liabilities prove to be significant and have a negative impact on sales. This suggests that an increase in total liabilities would lead to a decrease in firm sales. Net fixed assets have a positive significant relationship to sales, which theoretically makes sense. The second regression shows that bank loans have a negative relationship with sales. The first lag does show significance while the second lag does not. Net fixed assets are no longer significant either but still show a positive relationship to sales. A negative relationship for bank loans does not correspond with the existing literature. This could hint at the existence of zombie lending practices. This is when loans are given to firms even though they are not profitable. Further analysis will have to be carried out to confirm whether this could be the case. The non-bank variable also shows a significant negative relationship. This could be expected as the government is not profit driven and would give out loans to companies regardless of their profitability, hence perhaps more evidence of zombie lending occurring. There is one major issue with the third regression relative to the first two and that is the number if observations decrease dramatically. This hinders the reliability of the results, especially when comparing to the other regressions which have far more observations.

The next regression I carry out looks into effect on income. The table below illustrates the regressions using income that is divided by total assets:

VARIABLES	(1) totallaib with netfixedassets	(2) bank with netfixedassets	(3) nonbank with netfixedassets
L.lnTotalliab1	0.223		
	(2.369)		
L2.lnTotalliab1	-0.815***		
	(0.164)		
lnNetfixedassets1	0.143***	0.0883*	0.133***
	(0.00994)	(0.0521)	(0.0448)
lnindiaGDP	-0.156***	0.0117	-0.0382
	(0.0334)	(0.0373)	(0.0620)
L.lnbank		-0.0932***	
		(0.0156)	
L2.lnbank		0.0198	
		(0.0163)	
L.lnnonbank			-0.0307**
			(0.0120)
L2.lnnonbank			-0.00485
			(0.0178)
Constant	2.199***	-0.386	0.319
	(0.613)	(0.590)	(1.094)
Observations	146,383	17,811	6,490
R-squared	0.020	0.010	0.017
Number of CompanyName1	19,540	4,386	1,718

From the table above we can observe that the first lag of total liabilities is showing a positive relationship however it is not significant. The second lag illustrates a negative relationship and shows to be significant. For bank loans the first lag also

illustrates a significant negative relationship once again leading us to suggest the existence of zombie lending. Interestingly in the second lag it can be seen that there is now a positive relationship between bank loans and my proxy for firm productivity. It is worth noting that this is not shown to be significant but can still point out to a delayed positive effect of the loan on my proxies for firm productivity. Non-bank loans still continue to have a negative relationship with my proxies for firm productivity, with only the first lag being significant. Net fixed assets can be seen to have a positive significant relationship with income as I expected. The issue with the observations for the third regression continues as they drop drastically relative to the other two regressions thus making reliable comparisons is quite difficult.

So we have observed that when using sales divided by total assets we find that there is a consistent and significant negative relationship with total liabilities, bank loans and non-bank loans. With the bank loans we could suggest that there is the existence of zombie lending in the economy. For the non-banks especially, the existence of zombie lending could be a realistic situation due to the fact that the government is not looking to profit maximize and so would carry on giving loans to those companies that are not profitable as well. The next step of the analysis will now be to regress my proxy variables that are divided by the GDP deflator for India. The table below illustrates the results for sales divided by the GDP deflator:

VARIABLES	(1) totallaib with netfixedassets	(2) bank with netfixedassets	(3) nonbank with netfixedassets
L.lnTotalliab2	0.499***		
	(0.0175)		
L2.lnTotalliab2	-0.0430***		
	(0.00872)		
lnNetfixedassets2	0.318***	0.606***	0.549***
	(0.0137)	(0.0501)	(0.0813)
lnindiaGDP	-0.109***	0.0754*	0.0318
	(0.0377)	(0.0445)	(0.0755)
L.lnbank		-0.00629	
		(0.0250)	
L2.lnbank		0.0315	
		(0.0244)	
L.lnnonbank			-0.0443***
			(0.0141)
L2.lnnonbank			-0.0368
			(0.0236)
Constant	2.095***	-0.398	1.184
	(0.689)	(0.730)	(1.331)
Observations	123,721	16,360	6,157
R-squared	0.237	0.158	0.164
Number of CompanyName1	16,928	4,126	1,664

The results above illustrate that both lags for total liabilities are significant however what is interesting is that it is showing a positive relationship with my proxy variable in the first lag. The second lag however now illustrates a negative relationship and so this regression shows that over time the total liabilities is having a negative effect on my proxy for firm productivity. This could again be due to the existence of zombie lending practices. The bank loan variable does not show any significance in either time period. It is negative for the first lag but surprisingly it is shown to be positive in the second lag. This could be highlighting a delayed positive

effect from the bank loan as it takes time to invest the loan and see the effects. For example a company could receive a loan and purchase new machinery. The positive effects of increased productivity would not be immediately felt and perhaps over a couple years we would see the benefits. The non-bank variable remains negative throughout the two time periods and is only significant for the first time period. Again this is expected due to the nature of the government in that it is not looking to be efficient and will supply loans to all companies. I still have the issue of my observations decreasing significantly for the last regression, which hinders the reliability. Net fixed assets is seen to be positive and significant for all my regressions, which is to be expected.

The final set of regressions I carry out will be to regress income, which is divided by the GDP deflator, and observe the relationship for all three different independent variables. The table below illustrates the results:

VARIABLES	(1) totallaib with netfixedassets	(2) bank with netfixedassets	(3) nonbank with netfixedassets
L.lnTotaliab2	0.551***		
	(0.0141)		
L2.lnTotalliab2	-0.0174**		
	(0.00757)		
lnNetfixedassets2	0.263***	0.425***	0.386***
	(0.00983)	(0.0403)	(0.0533)

lnindiaGDP	-0.150***	0.0658*	0.0613
	(0.0370)	(0.0375)	(0.0703)
L.lnbank		0.0627***	
		(0.0197)	
L2.lnbank		0.0877***	
		(0.0189)	
L.lnnonbank			-0.0299**
			(0.0117)
L2.lnnonbank			-0.00978
			(0.0186)
Constant	2.658***	-0.542	0.974
	(0.677)	(0.606)	(1.247)
Observations	146,381	17,811	6,490
R-squared	0.262	0.118	0.103
Number of Company Name1	19,540	4,386	1,718

The total liabilities variable is significant for both time lags although it is seen to have a positive relationship with my proxy variable. It follows the same pattern as the sales table in that the second lag shows a negative relationship. So over time the relationship changes and is significant showing that there could be some kind of poor lending practices occurring. The bank loans variable is showing significance in both time periods and interestingly is positive for both. So bank loans have a positive effect on my proxy variable for firm productivity. This lines up with exactly what is expected from the current literature on this topic. In essence it shows that firms take out loans, invest and then this leads to gains in productivity which in this

case is gains in income. The non-bank variables are once again negative in both time periods but are only significant for the first time period. This again shows that the government is unconcerned with whether the firms might be inefficient but will look to give out loans anyway. However with the number of observations still being an issue the reliability of the third regression is hindered. Net fixed assets is still shown to be positive and significant for all three regressions.

Policy Implications:

Now that we have carried out our analysis we know that non-bank loans, which are those that are given out by central and state government, are not effective for my proxy variables for firm productivity. Although the reliability of some of the regressions can be questioned, due to the lack of observations, it can still be argued that the results illustrate signs of zombie lending. There is a consistent negative relationship throughout the regressions I have carried out. Perhaps these are big national companies and they lobby more with the government in order to get these loans even though they are not being as efficient as other companies. Bank loans on the other hand have shown some positive effects for the proxy variables I use. Unlike the government banks need to be efficient and must choose carefully whether or not to give out loans. Moving forward I would recommend that the government play a much less significant role for lending and it is left more to the banks as it would be much healthier for the economy.

Conclusion:

To conclude, I find that the supply of bank loans has a positive relationship with my proxy variables for firm productivity. Using a dataset covering 26000 firms between 1997-2014 I am able to illustrate that banks lending to firms can lead to improvements in both sales as well as income. Over the time periods I lagged we can observe a delayed positive impact. The non-bank loans, which consisted of loans from the central and state government, are shown to have negative effects on my proxy variables. This could be illustrating that there are zombie lending practices occurring and that some of these large national companies are able to lobby with the government to receive these loans even thought they are not functioning efficiently. On balance the number of observations is not significant for the non-bank regressions, which hinders the reliability of those results. In terms of policy I would recommend that most of the lending should be done through the banks as they would be more careful as to who they loan to and too much zombie lending in an economy can have disastrous effects.

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